CENTER FOR BEAM PHYSICS SEMINAR

"The ALS Superbend Project: High energy photons from a low energy light source."

David Robin (ALS/LBNL)

Friday August 23, 2002, 10:30 AM
Albert Ghiorso Conference Room (71-264), LBNL
•••*Refreshments served at 10:20 AM* •••

Abstract: At the ALS there had been an increasing demand for additional high brightness hard x-ray beamlines in the 7 to 40 KeV range. In response to that demand, the ALS storage ring was modified in August 2001. Three 1.3 Tesla normal conducting bending magnets were removed and replaced with three 5 Tesla superconducting magnets (Superbends). The radiation produced by these Superbends is an order of magnitude higher in photon brightness and flux at 12 keV than the 1.3 Tesla bends, making them excellent sources of hard x-rays for protein crystallography and other hard x-ray applications. At the same time the Superbends do not compromise the performance of the facility in the UV and Soft X-ray regions of the spectrum. The Superbends will eventually feed 12 new beam lines greatly enhancing the facility's capacity in the hard x-ray region. The Superbend project is the biggest upgrade to the ALS storage ring since it was commissioned in 1993. In this talk we present a history of the project, as well as the installation, commissioning, and resulting performance of the ALS with Superbends.

Biographical data and research interests: Dave Robin received his Ph. D. in Physics at UCLA under the supervision of Prof. Claudio Pellegrini. His thesis topic was the study of the beam dynamics in a quasi-isochronous storage ring. In 1991, he joined LBNL. From-1991 - 1993, he worked in the Center for Beam Physics on the lattice design and beam dynamics in the PEP–II B-factory low energy ring. From 1993 - present he joined the ALS accelerator physics group, becoming deputy group leader in 1997, and group leader in 1999. His research has been primarily in the study of single particle beam dynamics in the ALS. In particular he has applied various techniques to the study of the beam dynamics in the ALS such as LOCO and frequency map analysis that have provided great insight and improved the performance of the facility. He was also the project leader of the Superbend Project and Pinger Project. His current research interests are in the area of charged particle optics, applied to various problems including electron microscopes and insertion devices.